

REMARKS

Claims 1-19 were pending in the application. Claims 7 and 8 have been amended. Accordingly, upon entry of the amendments presented herein, claims 1-19 will remain pending in the application.

Claims 7 and 8 have been amended to correct obvious typographical errors.

No new matter has been added to the application by way of these amendments. Applicant reserves the right to pursue the subject matter of the present claims prior to being amended herein in this application or in another related application.

Claim Objection

Claim 8 is objected to because the element “Mg” is recited twice. In response, the second occurrence of “Mg” has been deleted from the claim. Accordingly, Applicant respectfully requests reconsideration and withdrawal of this objection.

Claim Rejections – 35 USC § 102: White et al.

Claims 1, 2, 4-9, 11 and 13-19 are rejected under 35 USC 102(b) as being anticipated by White *et al.* (U.S. Patent No. 5,672,558).

Applicant respectfully disagrees. Claims 1, 2, 4-9, 11 and 13-17 of the instant application specify a process for preparing a supported catalyst or catalyst precursor *containing carbon*, wherein the last step of the process involves combusting a mixture of a catalyst support or catalyst support precursor, a metal-containing compound and an organic compound, such that the organic compound is *partially* converted to carbon. The presence of carbon in the prepared catalyst is described throughout the instant application, including, for example, p. 9, ll. 15-19 (“It is a necessary feature of the combustion that the organic compound is converted to carbon which may be present either as elemental carbon or as a carbide”) and p. 17, ll. 9-10 (“The catalyst or catalyst precursor contains carbon in all of its possible forms”). The combustion step can be performed at a variety of temperatures and times (see, *e.g.*, p. 13, ll. 15-22), which can be adjusted to alter the amount of carbon in the catalyst or catalyst precursor: “...carbon content

depends of the combustion temperature and atmosphere. Lower temperature combustion in static air leads to a higher carbon content...while high temperature combustion in flowing air leads to...lower carbon content” (p. 22, ll. 11-17). Indeed, the instant inventors have found that it is advantageous for the catalyst or catalyst precursor to contain carbon.

White *et al.* specifically discloses the preparation of a catalyst support by preparing a paste, followed by calcining (combusting) the paste. White *et al.*, however, does not disclose or suggest an “incomplete” combustion to ensure that some of the organic compound that is in the paste remains as carbon. White *et al.* fails to teach or suggest the partial combustion process as claimed in claims 1, 2, 4-9, 11 and 13-17 of the instant application. Furthermore, this reference does not teach or suggest the carbon-containing catalysts of claims 18 and 19.

Additionally, White *et al.* teach the preparation of a paste comprising a Group IVB metal oxide, at least one solvent, and at least one acid. Specifically, the amount of solvent used in this process “is an amount that provides a consistency which allows for a shape to be mechanically formed out of said paste, but not so fluid as to fail to hold the formed shape or become sticky and agglomerate with other particles” (col. 2, ll. 56-61). This is in direct opposition to claim 1 of the instant application, which claims the preparation of a liquid mixture that would be unable to “hold [a] formed shape” as described by White *et al.* In fact, p. 11, l. 26 – p. 12, l. 7 of the instant application notes that “liquid mixture” means that the mixture “is in the form of a homogenous liquid,” which allows the “metal-containing compound...to contact the support or support precursor, and this is achieved by the use of a liquid mixture.” Therefore, White *et al.* fails to teach or suggest the liquid mixture preparation as claimed in claim 1 of the instant application. Furthermore, Applicant notes that if the invention of White *et al.* were changed from a paste to a liquid, such a modification would change the invention’s basic principle of operation.

Accordingly, because White *et al.* fails to teach or suggest each and every element of the claimed invention, Applicant respectfully requests that the rejection under 35 USC § 102(b) be reconsidered and withdrawn.

Claim Rejections – 35 USC § 102: Sugier et al.

Claims 1, 9 and 10 are rejected under 35 USC 102(b) as being anticipated by Sugier *et al.* (U.S. Patent No. 3,787,332).

Applicant respectfully disagrees. Sugier *et al.* is directed toward a process of manufacturing a catalyst by mixing catalyst components in solution with a heat-decomposable complexing organic compound or gel-forming compound, the solvent being evaporated thereafter and the mixture being finally heated. While Sugier *et al.* does disclose that this process may be used to prepare a supported catalyst, this reference does not teach or disclose the process for preparing a supported catalyst or catalyst precursor of the invention as claimed. Specifically, Sugier *et al.* describes two embodiments for the production of a supported catalyst (col. 4, ll. 10-21):

a gel-forming substance or a complexing substance may be added to a solution of the metal compounds to be associated, which results in a precursor that may be used to impregnate the carrier. Alternatively the gel forming substance or the complexing substance may be admixed with the carrier, and, after drying thereof, a solution of the metal compounds to be associated is added thereto.

The first process describes the impregnation of a metal catalyst onto a support *after* the catalyst is processed with a gel-forming substance or a complexing substance. This is exemplified in the examples of Sugier *et al.*, where a catalyst/gel-forming substance/complexing substance solution is first prepared, and then impregnated onto a support *in two steps* (see, *e.g.*, Examples 9, 11 and 12). This process is in contrast to claims 1, 9 and 10 of the instant application, where a catalyst support is added to the metal catalyst (as well as an organic compound) *at the same time*.

The second process describes first adding the gel forming substance or the complexing substance to the carrier, and, *after drying*, impregnating the metal compound onto the support-complex. This process is distinct from process as claimed in claims 1, 9 and 10 of the instant application, which, as stated above, combines the metal catalyst and catalyst support into one liquid mixture.

Therefore, Sugier *et al.* fail to teach or suggest the preparation of a supported catalyst as specified in claims 1, 9 and 10 of the instant application.

Furthermore, Applicant notes that Sugier *et al.* does not teach or suggest the partial combustion method specified in claims 1, 9 and 10 of the instant application. It can also be seen from the examples of Sugier *et al.* that no carbon remains in these catalysts. In Examples 8-13, the calcination temperature is 550°C for four hours. Such conditions will ensure that no partial conversion of the organic compound to carbon takes place, as in claim 1 of the instant application.

Accordingly, because Sugier *et al.* fails to teach or suggest each and every element of the claimed invention, Applicant respectfully requests that the rejection under 35 USC § 102(b) be reconsidered and withdrawn.

Claim Rejections - 35 USC § 103

Claims 18 and 19 are rejected under 35 USC 103(a) as being unpatentable over White *et al.* According to the Office Action, “the reference teaches the claimed components, as well as respective amounts of said components corresponding to that recited in claims 18 and 19.”

Applicant respectfully disagrees. As discussed above, the supported catalysts and catalysts precursors of the invention are prepared using a partial combustion process, such that a residual amount of carbon remains on the catalyst. The combustion process described at col. 4, ll. 11-15 of White *et al.*, however (about 400°C to about 1100°C for a period of time ranging from about one to twelve hours) will not result in any residual carbon remaining on the catalyst. As such, White *et al.*, does not teach or suggest a catalyst with residual amounts of carbon, let alone using such a catalyst in a Fischer-Tropsch synthesis or steam reforming reaction.

Therefore, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 18 and 19 under 35 USC § 103(a).


CONCLUSION

In view of the foregoing, entry of the amendments and remarks herein, reconsideration and withdrawal of all rejections, and allowance of the instant application with all pending claims are respectfully solicited. If a telephone conversation with Applicant's attorney would help expedite the prosecution of the above-identified application, the Examiner is urged to call Applicant's attorney at (617) 227-7400.

An extension of time and appropriate fee is being filed herewith. If any additional fees are due, please charge our Deposit Account No. 12-0080, under Order No. ISI-005US from which the undersigned is authorized to draw.

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Respectfully submitted,

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